

FINAL REPORT AGRAQUA399

Western Massachusetts Center for Sustainable Aquaculture June 28, 1999

This has been a very exciting year at the Western Massachusetts Center for Sustainable Aquaculture in that the Center was launched and has accomplished much of its plan of work. In addition to the support from this grant the Center had support from the Society for the Perpetuation of Agriculture. The demonstration facilities on the farm in Sunderland were initially developed with a grant from Rural Development Agency of USDA.

In October the Executive Director of the Center, Ken Bergstrom taught 120 students from a UMass class an introductory two-hour session in aquaculture at the demonstration site in Sunderland. For each of four days one quarter of the class came to the farm to learn about the various-opportunities in fresh water aquaculture. The Center also did workshops for farmers interested in getting involved in aquaculture.

During the spring term Mr. Bergstrom taught a course in aquaculture to fourteen Hampshire College students. The students, as part of their class, built a recirculating aquaculture system, which provides a demonstration site and an opportunity for people to come and explore the nature of recirculating aquaculture. The system currently has five hundred pounds of Tilapia in it and they are doing well. We have installed a video camera and will be installing many temperature sensors to monitor conditions in the system. The video feed will be available from any computer on campus. In the fall we will be on line with the video images. The system will be maintained as a demonstration site, which will be available for individual or group use.

On July 6 Mass Agriculture in the Classroom will bring teachers to the Center to learn how to use aquaculture in classroom curriculum as a teaching aid. Hampshire College has an illustrious history of developing curricula for K-16 and the science faculty has provided good input to the programs developed by the Center. The Center has four faculty members from the School of Natural Sciences on the Board of Advisors.

During the past year the Center has chaired a number of Five College meetings to work on developing a Five College Aquaculture Certificate. None of the colleges in the Five College consortium have a degree program in aquaculture. This program, if implemented, will be the equivalent of a major in aquaculture but without the political difficulty of trying to create a new major. Present at these meetings were representatives from Hampshire College, UMass, and Amherst College.

The Berkshire National Fish Hatchery in Monterey will soon be a field station for the Center providing research and educational opportunities in fisheries and aquaculture and will provide opportunities for innovative curriculum development.

The Center established an office in the Cole Science Center at Hampshire College and developed a good freshwater aquaculture library, which is available to students, landowners, and the general public for researching techniques and species of their particular interest. The library established with the grant has been used extensively by the students this spring. It has also provided a source of background information by which the Director can locate information requested in phone conversations or in person from

interested people. The list of resources will be posted on our website this fall so that it is more broadly available.

The portable water testing equipment acquired under the grant is kept in the office and used for site visits and fieldwork.

The Center was successful in placing one student in an internship at Aquafutures in Turners Falls for the summer. A number of additional internship possibilities were promoted by a regular publication of Hampshire College. It is hoped that the Center will have more direct effect in placing interns in the coming year.

The Center has established contact with the Farm Viability Program of DFA. During the coming year we expect to provide assistance to the program in suggesting ways in which aquaculture can play a significant role in the bottom line of farm income.

The Center collaborated with the Southeastern Mass Center to put on a workshop for freshwater finfish culture. Topics covered included Yellow Perch, Ornimentals, and crawfish.

Two workshops have been scheduled for late September /October. These will be for the introduction of the farming community to bait fish production. We have contracted with the Hampshire, Franklin, Hamden Conservation Districts to put on the workshops. One will be at Hampshire College and serve the valley region; the other will be at the Berkshire National Fish Hatchery and will provide information to Berkshire County residents. We will be bringing in specialists to share their knowledge with the participants. We expect that both the other Centers (SEMAC and NEMAC) will be cosponsors and contributors to the workshops.

Promotion is an ongoing activity of the Center. The Center has been working to promote its presence by attending other gatherings including: Mass. Market Place, a Sustainability Conference at Hampshire College, discussions with Mass. Farm Bureau, CISA, and others in the local farming community. The Massachusetts Division of Fisheries and Wildlife has been referring people to the Center for assistance in pond stocking. We will be promoting the workshops this fall through various farm publications and mailings. Mass. Ag in the Classroom has publicized the upcoming workshop, which we are doing with them at the Center at Hampshire College

Within the next few weeks a lease will be signed between the US Fish and Wildlife Service and Hampshire College for the Berkshire National Fish Hatchery and the Field Station will become a reality. The Center already has combined commitments of \$32,000 dollars to get the Field Station up and running. We have over \$51,000 in pending funding and grant applications in addition for the Center and the Hatchery. This does not include the DFA support, which we hope will continue.

The main problems encountered during the project were related to trying to get too many programs started simultaneously. The Center accomplished much of what it set out to do, but not as much as had been hoped. The fact that the grant award was delayed meant that the plan of work had to be accomplished in five months rather than a longer period. The main goals and objectives of the Center were accomplished and the Center has a lot to build on in the coming year.

In the coming year more extension work will be done with the farming community and should result in a number of new aquaculture operations. Through workshops, hands on training at the college and at the field station, and farm site visits the Center will work to improve the access to aquacultural information. Many

highschools and community colleges in the area are starting up aquaculture programs. The Center will provide support and encouragement to these other programs.

In terms of the business potential for aquaculture, Western Massachusetts has a demand of approximately two thousand pounds of baitfish per week. Most of this demand is satisfied through the import of baitfish from Arkansas. Farmers in the area could raise this amount of bait in ponds already present on the farms. It could represent a minimum of \$250,000 annually to the farm economy with a minimum of effort. During the next year much effort will be made to get farmers involved in small-scale baitfish production to at least get their feet wet. Once started they can develop the business to the level of their individual comfort.

Small-scale start up pond-based aquaculture will have little or no impact on the environment. Baitfish utilize nutrients which previously were uncaptured or of minimal impact. Advice provided by the Center provides appropriate caveats for maintaining a quality environment.

This has been a very good first year for the Center and we look forward to improving the growth and development of the industry in the coming year.

Report

Activities of the Western Massachusetts Center for Sustainable Aquaculture for

Massachusetts Society for Perpetuation of Agriculture May 1999

During the past year the Western Massachusetts Center for Sustainable Aquaculture has been actively ensconced at Hampshire College in Amherst. The College has provided an office, phone, fax, and email and computer connections, which has made a big help in launching the Center's activities.

During the summer of 1998 there were some problems which developed involving a member of the originating team and the facilities which were set up at Great Swamp Farm. This was resolved by dismantling the greenhouse and metal tanks. The greenhouse and one tank went to Cape Cod to be set up to do aquaculture there. The Cement tanks, which are a significant part of the original facility, are still functioning effectively and the two metal tanks have been brought to Hampshire College. We set up one of the tanks in the bioshelter (greenhouse) at Cole Science Building and it is functioning as a demonstration recirculating aquaculture system. We are currently growing 500 pounds of fish in the system.

The computer and software which were purchased with your grant allows the Center good access to the Net and since it is portable I can carry files with me when I am traveling across the state and working with landowners.

During the past year the Center has done a number of things to help in the development of aquaculture in the State. I have also laid the foundation for doing much more in the coming year. The Following is a description of some of the major activities with which the Center was involved or developed.

• On May 4, 1998 I did a workshop for the USDA Rural Development agency directed at small-scale aquaculture for the Southeast Asian community and minority farmers. There were 22 participants.

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- In the fall we introduced 120 students from a UMass Introduction to Agriculture course to aquaculture. At the end of the course the students were given a questionnaire asking them to indicate their three top preferences among the types of farming they had seen. Aquaculture was in the top three for 12 of the students. These are the farmers of tomorrow. This is the third year we have done this and this is the first year we have made such an impression!
- The Center has been working to develop a Five College Aquaculture Certificate program. This would allow any students attending any of the Five Colleges (Smith, Mt. Holyoke, Amherst, and UMass to study aquaculture courses at any of the other colleges and to know what would be required for a degree specializing in aquaculture. This will help to keep the message of aquaculture opportunity in a higher profile.
- During the summer of 1998 the cages which were purchased through the grant were used to grow both Largemouth Bass and Tilapia. The Center provided a service to a tilapia grower in the area by holding fish in cages for him until he had his facilities ready for them. The Bass were part of the demonstration facilities available on the farm. During the summer of 1999 we will provide the same opportunities to area growers and hope to get 4H involved in the demonstration activities as well.
- April 3, 1999 I participated, as a presenter, in a workshop on "Finfish Aquaculture" at Massachusetts Maritime Academy, which was organized by the Southeastern Massachusetts Aquaculture Center.
- In the spring as part of Center activities I taught an aquaculture course on urban aquaculture at Hampshire College and had 14 students enrolled.
- I have had meetings with 4H to discuss getting them involved with growing fish as youth projects. I am hopeful that we can get some projects started by next year.
- I am doing a workshop for Massachusetts Agriculture in the Classroom on Tuesday July 6, to provide teacher training in aquaculture. It is opportunities like this, which allow us to use the demonstration facility most effectively.
 - I have been in discussions with John Gerber from Cooperative Extension and Jay Slattery of Massachusetts Farm Bureau regarding support for our efforts to reach the farming community. John indicated that if I could get Mass. Farm Bureau on board he could probably find some support for the outreach activities.
- I am currently waiting for a decision from Farm Bureau regarding a program, which I proposed to them to get farmers involved in baitfish production. Enclosed please find a copy of the letter to Jay Slattery
- I am a member of the Aquaculture Subcommittee of the Farmland Advisory Committee. The committee is about to resume deliberation s on the revision of the Wetlands Protection Acts regulations regarding aquaculture. The revision will benefit the farming community greatly since it will spell out the exemptions for aquaculture, which are available under the Act.
- The Center has an evolving library of aquacultural resources. Thanks to support from DFA the library will provide many books and documents not available else where in the State. People interested in using the resources can check them out for study.

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• The Center and Hampshire College are about to enter into a lease with US Fish and Wildlife Service to lease the Berkshire National Fish Hatchery. This facility is located in Hartsville south of Great Barrington. It will make an excellent training facility and will provide the Center and the College with a field station where we can provide good hands training for both students and the farming community. The chance at this site to educate the public as well as students and landowners represents a major opportunity to raise the awareness of people regarding the potentials of aquaculture.

1998-1999 Expenses

	Computer	\$4,000
	10 Net Pens (cages)	\$2,400
7	Biofilter media	\$5,600
	3 Solar Collectors	\$ 600
	3Pumps and 2Blowers	\$1,900
>	Misc. Plumbing supplies	\$1,325
\succ	l Belt-feeder	<u>\$ 175</u>
	Total	\$16,000

It should be noted that the money provided was matched in part by Hampshire College through the help of the Physical Plant in running electrical and air lines for our facility. They also wired in the alarm system, which provides a backup in the event of an electrical outage.

As you may know Hampshire College has a strong emphasis in their science teaching on sustainable agriculture. Future development of the campus and science curriculum is closely tied to a Sustainability Center. The Sustainability Center will include areas such as composting, Integrated Pest Management, Permaculture, Heritage Breed Livestock, Sustainable Technology, and Aquaculture. Aquaculture at Hampshire College, promoted through the activities Western Massachusetts Center for Sustainable Aquaculture will play a significant roll in the evolution of the campus.

I hope you are pleased with the progress the Center has made with your help. I am looking forward to some significant developments by the Center during the coming year. I hope you will continue to assist in the evolution of the Center.

The major development for the summer of 1999 is the acquisition of the Berkshire National Fish Hatchery as a field station for the Center. I will be working to raise money to support the development of the site, which has been neglected for five years. If you would be willing to match last year's grant to provide start up capital for the facility it would give a real boost to our project. The site is complete but needs to be cleaned up and some renovations to the existing structures and equipment.

Repairs	\$5,000
Electrical	
Phone	\$ 600
Equipment	\$4,600
Fish	. ,
Feed	\$1,000
Heat	<u>.\$ 800</u>
Total	\$16,000

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